

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 19

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte AKINOBU SATO

Appeal No. 1999-2703
Application No. 08/772,068

HEARD: October 23, 2001

Before KRASS, FLEMING, and GROSS, Administrative Patent Judges.

KRASS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1-8, all of the pending claims.

The invention is directed to a contact-type magnetic disk drive. The mass of the sliding contact and the length and rigidity of the cantilever spring supporting the sliding contact will determine how well the sliding contact tracks and how much it skips and jumps. The smaller the weight of the

load bearing upon the surface of the disk, the smaller the frictional wear on both the sliding contact and the disk. If the rigidity of the spring is increased, vibration is reduced but if the weight of the load or the rigidity is increased, there is more friction and greater wear on both the slider head and the disk. Thus, there are various parameters to take into account when designing a sliding contact-type magnetic disk. The instant invention is said to achieve better results than conventional devices by limiting the spring length to less than 5mm and, preferably, to 1-3mm range, keeping the magnetic head slider mass greater than 2mg, and urging the head slider against the magnetic disk by a load of less than 1g inclusive.

Representative independent claim 1 is reproduced as follows:

1. A contact type magnetic disk drive comprising:
 - a contact pad carrying an electromagnetic transducer for recording and reproduction on an end thereof, and capable of sliding in contact with a magnetic disk medium;
 - a magnetic head slider on which said contact pad is mounted;
 - a suspension spring supporting said magnetic head slider;and

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a spring support mechanism supporting said suspension spring;

wherein said suspension spring has a length in the range of approximately 1-3 mm inclusive.

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The examiner relies on the following references:

Yamaguchi et al. (Yamaguchi)	5,243,482	Sep.
07, 1993		
Hamilton et al. (Hamilton)	5,483,025	Jan. 09,
1996		
	(Filed May 15, 1995)	
Hamaguchi et al. (Hamaguchi)	5,530,605	Jun.
25, 1996		
1994)	(Filed Jun. 07,	

Claims 1, 3, 5 and 7 stand rejected under 35 U.S.C. §
102(e) as anticipated by Hamaguchi.

Claims 2, 4, 6 and 8 stand rejected under 35 U.S.C. §
103. As evidence of obviousness, the examiner offers
Hamaguchi and Yamaguchi with regard to claims 2 and 6; and
Hamaguchi and Hamilton with regard to claims 4 and 8.

Reference is made to the briefs and answer for the
respective positions of appellant and the examiner.

OPINION

We turn, first, to the rejection under 35 U.S.C. §
102(b).

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In applying Hamaguchi against the claims, the examiner identifies the corresponding components of Hamaguchi as: electromagnetic transducer (4), magnetic disk medium (3), magnetic head slider (2), suspension spring (1) and spring support mechanism (6). With regard to the suspension spring having "a length in the range of approximately 1-3 mm inclusive," the examiner cites column 5, lines 61-62, of Hamaguchi. The cited section of Hamaguchi states that the overall length of the support mechanism "can be reduced to 3-9 mm."

Appellant argues that this disclosed range of Hamaguchi is not the range claimed and, since 3 mm is the shortest spring that Hamaguchi has, there is nothing in the reference to support the claimed range of "1-3 mm." We disagree.

The claimed range is "approximately 1-3 mm inclusive." Hamaguchi discloses a range of "3-9 mm." Accordingly, a length of 3mm overlaps the claimed range as well as the range disclosed by Hamaguchi. Since Hamaguchi does, indeed, disclose a value of spring length within the range of the

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instant claimed invention, Hamaguchi anticipates the instant claimed subject matter.

Appellant argues the advantages of the instant invention and refers to the many examples in the specification and to the tables at pages 14-15 of the specification in order to show the differences between the instant invention and the prior art. However, such arguments and objective evidence are irrelevant to a rejection under 35 U.S.C. § 102. No matter what advantages are achieved by the instant disclosed invention, the language of the instant *claimed* invention is met, and hence anticipated, by the disclosure of Hamaguchi.

Accordingly, the rejection of claims 1 and 3 under 35 U.S.C. § 102(e) is sustained.

We will not, however, sustain the rejection of claim 5 under 35 U.S.C. § 102(e) because that claim specifically calls for "a gimbal spring." The examiner identifies spring 12 in Hamaguchi as such a spring. However, the spring in Hamaguchi, identified by the reference as a "flexible beam," is not a

"gimbal" spring, as shown as element 7 in Figure 4 of the instant application and as argued by appellant at page 5 of the reply brief. In the reply brief, appellant points out that the gimbal "is important because [the] slider head moves not only along the recorded track, but also in a seek . . . direction. Who knows how the slider head will move if the Hamagushi [sic, Hamaguchi]. . . zig-zag or swastika spring is substituted for applicant's spring?" The examiner does not respond. Accordingly, the examiner has not presented a prima facie case of anticipation since a "gimbal spring," as claimed, has not been persuasively shown as being taught by Hamaguchi.

Since we have not sustained the rejection of claim 5 under 35 U.S.C. § 102(e), we also will not sustain the rejection of claim 7, dependent thereon, under 35 U.S.C. § 102(e). Likewise, we will not sustain the rejection of claims 6 and 8, dependent upon claim 7, under 35 U.S.C. § 103 as neither Yamaguchi nor Hamilton cures the deficiency noted above.

Turning to the other rejections under 35 U.S.C. § 103, with regard to claim 2, the examiner recognizes that Hamaguchi is silent with regard to the mass of the slider, e.g., the mass being "greater than 2 mg inclusive." The examiner takes "Official notice" that magnetic head sliders having the claimed mass "are notoriously old and well known in the art" [answer-page 5] but points to U.S. Patent No. 5,243,482 to Yamaguchi, specifically column 2, line 59, as evidence of the allegation. Yamaguchi discloses a slider mass of 57 mg, which is "greater than 2mg inclusive," as claimed.

Appellant does not deny that Yamaguchi shows such a slider mass but argues that the tables of the instant specification show "that not just any weight can be put on the end of just any suspension spring" [principal brief-page 9].

Appellant argues that Yamaguchi shows a "very complex and expensive support system," while appellant has a "simple and relatively low cost leaf spring" [principal brief-page 10]. However, appellant points to no claim language on which he relies with regard to such arguments.

Appellant points out that "all of these spring geometrics" have a bearing on the "moments and reactions of all parameters" [principal brief-page 10]. However, while it is true that many parameters must be taken into account by the artisan when designing a contact type magnetic disk drive, appellant has pointed to nothing to persuade us that the design of such parameters would entail anything more than ordinary skill in the art or that, based on the evidence provided by the applied references, the claimed values would be anything more than optimization of result effective variables.

We find nothing in appellant's arguments to convince us of any error in the examiner's explanation that it would have been obvious to provide the mass of the slider in Hamaguchi as being greater than 2 mg, as taught by Yamaguchi, "in order to provide slider stabilization during recording/reproducing by increasing its inertia in a manner *well known, established and appreciated in the art*, and as exemplified by Yamaguchi . . . wherein it is illustrated via an equation between lines 45 and

50 of COL. 2, that an increase in slider mass (m_2) results in a corresponding decrease in θ_2 , which represents a twist angle of the slider during operation" [answer-page 8]. As the examiner further explains, at page 9 of the answer, the "formulaic relationship is merely indicative of the intuitive nature as it pertains to the benefits of increasing the slider mass . . . "

At page 5 of the reply brief, in arguing for noncombinability, appellant points out that the drawings in both reference patents show support springs which are "completely different." We are unpersuaded. Combining the teachings of the references relied upon by the examiner does not involve an ability to combine their specific structures. In re Nievelt, 482 F.2d 965, 968, 179 USPQ 224, 226 (CCPA 1973).

The examiner's reasoning appears sound to us as to why the skilled artisan would have been led to employ a slider mass of 57 mg (taught by Yamaguchi) in the device of Hamaguchi, which does not specify the mass of the slider.

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While appellant may have achieved advantageous results employing the parameters claimed, we do not find persuasive any of appellant's arguments as to why, in view of the examiner's explanation, the instant claimed subject matter would not have been obvious, within the meaning of 35 U.S.C. § 103.

While claim 2 requires both a head slider with a mass of greater than 2 mg and an urging load of less than 1 g, and perhaps this combination might distinguish over the applied references, appellant appears to argue only the limitation directed to the mass of the slider. We find no argument directed to the combination of these masses. Arguments not made are waived. In re Kroekel, 803 F.2d 705, 709, 231 USPQ 640, 642-43 (Fed. Cir. 1986).

With regard to claim 4, adding the limitation of sequentially reducing the thickness of the suspension spring from a side adjoining the spring support mechanism toward the magnetic head slider, the examiner relies on Figure 1 of Hamilton for this teaching, contending that it would have been

obvious to provide the load beam spring of Hamaguchi with a thickness sequentially reduced as claimed "in order to stabilize lateral movement of the spring suspension in a manner well known, established and appreciated in the art, and to further ensure that 'flexure topography can be controlled with infinite variety,' 'mass reducing,' 'resonance characteristics,' while 'closely controlling fine-tuning of mechanical performance specifications'" [answer-page 7].

Appellant argues [principal brief-page 10] that the combination of Hamaguchi and Hamilton would destroy Hamaguchi's structure 14 if Hamilton's structure 20 were to be adopted in Hamaguchi. Again, combining the teachings of the references does not involve an ability to combine their specific structures. Hamaguchi appears to show a suspension spring with a rectangular thickness wherein Hamilton teaches [column 4, lines 37-47] that by employing a trapezoidal flexure, many advantages are achieved as compared to a rectangular shaped flexure. Accordingly, this would have prima facie suggested to the artisan to employ a trapezoidal shaped suspension spring in Hamaguchi.

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We have sustained the rejection of claims 1 and 3 under 35 U.S.C. § 102(e) but not the rejection of claims 5 and 7 under 35 U.S.C. § 102(e). We have sustained the rejection of claims 2 and 4 under 35 U.S.C. § 103 but not the rejection of claims 6 and 8 under 35 U.S.C. § 103.

The examiner's decision is affirmed-in-part.

No period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

ERROL A. KRASS)	
Administrative Patent Judge)	
)	BOARD OF PATENT
)	APPEALS
)	AND
)	INTERFERENCES
MICHEAL R. FLEMING)	
Administrative Patent Judge)	

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GROSS, Administrative Patent Judge, dissenting-in-part:

I would not affirm the examiner's rejection of claims 1 and 3 under 35 U.S.C. § 102.

The presently claimed invention is directed to a contact-type magnetic disk drive in which a suspension spring having a length less than 5 millimeters, and preferably ranging from 1 to 3 millimeters, supports the magnetic head slider. Appellant discloses on pages 16-18 of the specification that the length of the suspension spring along with the slider mass and the load urging the slider affect jump and wear thickness. Hamaguchi, relied on by the examiner in rejecting the appealed claims under both 35 U.S.C. § 102 and 35 U.S.C. § 103, discloses a similar structure with a suspension spring having a length which "can be reduced to 3-9 mm" (see column 5, lines 61-62).

The appealed claims define a structure including a suspension spring having a range of lengths which overlaps to a small extent the range disclosed by Hamaguchi. In my opinion, such facts support a *prima facie* case of obviousness under 35 U.S.C. § 103, but do not rise to the level of anticipation under 35 U.S.C. § 102. Anticipation requires the disclosure, in a single prior art reference, of each element of the claim under consideration. *W.L. Gore & Assoc. v. Garlock, Inc.*, 721 F.2d 1540, 1554, 220 USPQ 303, 313 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). In order to arrive at the presently

claimed invention one must **select** a range which differs from that explicitly disclosed by the reference. Such selection suggests a *prima facie* case of obviousness rather than an anticipation. Further, a *prima facie* case of obviousness can be rebutted by objective evidence demonstrating that the narrowly claimed invention exhibits unexpected properties which differ from the disclosed invention.¹

Background

The rejection in the present case was made solely under 35 U.S.C. § 102 for claims 1, 3, 5, and 7. The majority affirms the rejection of claims 1 and 3 based on an endpoint of the disclosed range falling within the claimed range. In my opinion, this outcome is incorrect. I agree with the reasoning expressed by the dissent of *Ex parte Lee*, 31 USPQ2d 1105, 1111 (Bd. Pat. App. & Int. 1993), that:

[I]n cases involving an overlap of a claimed invention and applied prior art, anticipation under 35 U.S.C. 102 can arise even though an applied reference does

¹ Although no alternative rejection has been set forth under 35 U.S.C. § 103 for the claims presently rejected under 35 U.S.C. § 102, in my opinion the evidence of record would not overcome an obviousness rejection of those claims, as appellant has failed to show the required nexus between the results and the length of the suspension spring. Instead the data appears to require particular values for both the suspension spring length and also the slider mass and load urging the slider, simultaneously, to obtain beneficial results.

not exemplify a species falling within the overlap. Anticipation under 35 U.S.C. 102 in such cases would appear to depend upon the extent of overlap which determines the amount of picking and choosing necessary to arrive at the claimed invention. In situations involving *virtually* little or no selectivity, a reference may be considered to describe the overlapping portion of a claimed invention within the meaning of 35 U.S.C. 102. *In re Sivaramakrishnan*, 673 F.2d 1383, 213 USPQ 441 (CCPA 1982); *In re Schaumann*, 572 F.2d 312, 197 USPQ 5 (CCPA 1978); *In re Petering*, 301 F.2d 676, 133 USPQ 275 (CCPA 1962). However, where a prior art disclosure is extremely broad, a *prima facie* case of obviousness under 35 U.S.C. 103 may not even arise. *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). Between these extremes, as in the situation before us, the overlap would have rendered the claimed invention *prima facie* obvious under 35 U.S.C. 103. *Merck & Co., Inc. v. Biocraft Laboratories, Inc.*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir. 1989); *In re Malagari*, [499 F.2d 1297, 182 USPQ 549 (CCPA 1974)]; *In re Susi*, [440 F.2d 442, 169 USPQ 423 (CCPA 1971)]. Thus, patentability under 35 U.S.C. 102 and 35 U.S.C. 103 must be resolved on a case-by-case basis, not by a *litmus test* determined by an end point . . . or any overlap whatsoever.

Rejection under 35 U.S.C. § 102

As in *Lee*, 31 USPQ2d at 1111, the patentee, Hamaguchi, does not recognize the problem solved by appellant nor disclose any particular device satisfying the requirements of the appealed claims. In other words, Hamaguchi's disclosure "does not describe *the claimed invention* within the meaning of 35 U.S.C. [§] 102 because it does not *identically* disclose a ... [device]

satisfying *each and every element* of the claimed invention" (footnote omitted). *Lee*, 31 USPQ2d at 1111. Instead, Hamaguchi discloses a range of thicknesses from which a skilled artisan may *select* a value. Hamaguchi does not disclose any more significance for one value, such as the lower boundary, than for any other value. In other words, one of ordinary skill in the art would believe all of the values to be of equal consequence. As such, I find no basis for the majority's interpretation that Hamaguchi's disclosed range is a specific disclosure for a particular value (i.e., 3 mm) in the absence of any examples, embodiments, or description that would lead the skilled artisan to that value.

I would agree that a disclosed example or "single embodiment of broadly claimed subject matter constitutes" an anticipation. *In re Lukach*, 442 F.2d 967, 970, 169 USPQ 795, 797 (CCPA 1971). Further, I would agree that "the disclosure in the prior art of any value within a claimed range is an anticipation of the claimed range." *In re Wertheim*, 541 F.2d 257, 267, 191 USPQ 90, 100 (CCPA 1976). *See also Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 782, 227 USPQ 773, 779 (Fed. Cir. 1985) (citing *In re Petering*, 301 F.2d at

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682, 133 USPQ at 280). However, I cannot agree with the majority that a disclosure of a range in Hamaguchi, with no specific examples or embodiments, constitutes a disclosure of one or more discrete points or values and, therefore, anticipates a range different from that disclosed.

The majority's opinion in the present case is inconsistent with the established policy that objective evidence may be introduced to overcome rejections based on overlapping ranges. See, e.g., *In re Wertheim*, 541 F.2d at 267, 191 USPQ at 100, wherein the court stated:

We appreciate the arguments made in *In re Malagari*, 499 F.2d 1297, 182 USPQ 549 (CCPA 1974), and the discussion in *In re Orfeo*, 58 CCPA 1123, 440 F.2d 439, 169 USPQ 487 (1971), to the effect that ranges which overlap or lie inside ranges disclosed by the prior art may be patentable if the applicant can show criticality in the claimed range by evidence of unexpected results. [Emphasis added.]

Even though the presently claimed range overlaps the ranges disclosed by the prior art, the majority opinion, by affirming the rejection of claims 1 and 3 under 35 U.S.C. § 102, leaves no room for a showing of criticality for those claims. In fact, my colleagues explicitly preclude such a showing for the claims rejected under 35 U.S.C. § 102 (on pages 4-5) by stating that

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unexpected results are relevant only to an obviousness rejection and, therefore, cannot be used to overcome the anticipation rejection.

In *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936-7 (Fed. Cir. 1990) the court explains:

The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims. See, e.g., *Gardner v. TEC SYS., Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir.), cert. denied, 469 U.S. 830 [225 USPQ 232] (1984); *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980); *In re Ornitz*, 351 F.2d 1013, 147 USPQ 283 (CCPA 1965); *In re Aller*, 220 F.2d 454, 105 USPQ 233 (CCPA 1955). These cases have consistently held that in such a situation, the applicant must show that the particular range is *critical*, generally by showing that the claimed range achieves unexpected results relative to the prior art range. *Gardner*, 725 F.2d at 1349, 220 USPQ at 786 . . . *Boesch*, 617 F.2d at 276, 205 USPQ at 219; *Ornitz*, 351 F.2d at 1016-17, 147 USPQ at 286; *Aller*, 220 F.2d at 456, 105 USPQ at 235.

The court in *Woodruff* states that appellant must show criticality. Thus, appellant must have the opportunity to do so. Accordingly, the majority's basis for affirming the anticipation rejection of claims 1 and 3 directly contradicts both *Wertheim* and *Woodruff*, *id.*² Further, the court reaffirms

² See also, *In re Russell*, 439 F.2d 1228, 1231, 169 USPQ 426, 428 (CCPA 1971) wherein the court held "if appellant can establish that his relatively narrow ranges yield unexpectedly superior results as against the broad Wei

that a *prima facie* case of obviousness in a situation of overlapping ranges can be rebutted by a showing that the claimed range has unexpected properties over the disclosed range in *In re Geisler*, 116 F.3d 1465, 1469-70, 43 USPQ2d 1362, 1365 (Fed. Cir. 1997) and *In re Soni*, 54 F.3d 746, 750, 34 USPQ2d 1684, 1687 (Fed. Cir. 1995), thereby implying that such situations call for rejections under 35 U.S.C. § 103 rather than under 35 U.S.C. § 102.

Lastly, a range is analogous to a genus, with each point or smaller range within the range being equivalent to a species. It is well established that a genus may render a species obvious but does not anticipate the species. *See, e.g., In re Petering*, 301 F.2d at 681-83, 133 USPQ at 279-81, wherein the species was held not to be anticipated by the genus where the genus included a large number of species, and unexpected results were considered in determining the obviousness of the species over

ranges as a whole, appellant will have established unobviousness of the claimed invention." Since anticipation is the "epitome of obviousness," *In re Fracalossi*, 681 F.2d 792, 794, 215 USPQ 569, 571 (CCPA 1982), it logically follows that a showing of criticality also establishes a lack of anticipation of the claimed invention.

the genus.³ Consequently, evidence can be presented to show that the species is patentable over the genus. See, e.g., *Petering*, 301 F.2d at 681-83, 133 USPQ at 279-81. Thus, completing the analogy, I find that a range that overlaps another range at only a single point renders the first range obvious, and that it is then necessary to consider evidence of unexpected results to determine the patentability of the first range.

In conclusion, the overlap of the ranges of Hamaguchi and the claimed invention is insufficient to constitute anticipation of the claims. Therefore, I would reverse the rejection of claims 1 and 3 under 35 U.S.C. § 102(e). I agree with the majority's reversal of the rejection of claims 5 and 7 under 35 U.S.C. § 102(e) and claims 6 and 8 under 35 U.S.C. § 103 both for the reasons set forth by the majority and also for the reasons discussed *supra* with respect to claims 1 and 3. I also agree with the majority's affirmance of the rejection of claims 2 and 4 under 35 U.S.C. § 103, since the overlapping ranges

³ Compare *In re Baird*, 16 F.3d 380, 382, 29 USPQ2d 1550, 1552 Fed. Cir. 1994) and *In re Jones*, 958 F.2d 347, 350, 21 USPQ2d 1941, 1943, in which the court held that a species may not necessarily be obvious over a genus where the genus includes a large number of species.

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along with the reasons discussed by the majority suggest a *prima facie* case of obviousness.

DISSENTING-IN-PART

ANITA PELLMAN GROSS)	BOARD OF PATENT
Administrative Patent Judge)	APPEALS AND
)	INTERFERENCES

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APJ KRASS

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DECISION: AFFIRMEND-IN-PART

Prepared: August 16, 2002